

plurality of subnetworks. Moreover, each of the independent claims 1, 10, and 17 specifies that the switching module includes a plurality of address tables for storing the layer 3 switching information for the respective subnetworks, where each address table is configured for storing host identifiers for a corresponding subnetwork.

For example, claim 1 specifies “storing address information from the layer 2 packet, including the host identifier, in a selected one of a plurality of address tables within the switching module based on the corresponding subnetwork identifier, each of the address tables configured for storing the host identifiers of respective transmitting nodes of a corresponding one of the subnetworks”.

Claim 10 specifies “selecting one of a plurality of address tables within the switching module based on the corresponding subnetwork identifier, each of the address tables configured for storing the host identifiers of respective transmitting nodes of a corresponding one of the subnetworks”.

Claim 10 also specifies “searching the one selected address table for layer 3 switching information ... based on the host identifier.”

Claim 17 specifies “a switching module ... including a plurality of address tables for storing the layer 3 switching information for the respective subnetworks, the switching module accessing a selected one of the address tables based on the corresponding subnetwork identifier....” Claim 17 also specifies “a plurality of network switch ports, each configured for receive a layer 2 data packet ... from a network node ... belonging to a corresponding subnetwork having the corresponding subnetwork identifier.”

Hence, the integrated network switch utilizes a (i.e., at least one) switching module, where the one switching module includes multiple address tables for storing layer 3 switching information for respective subnetworks. Hence, search times for layer 3 switching information can be dramatically reduced by providing a plurality of address tables within a single switching module and that can be independently accessed by the switching module on a per-subnetwork basis.

Further, use of multiple address tables for respective subnetworks within a single switching module optimizes layer 3 switching operations while maintaining a low cost, economical architecture based on a centralized switching module that can be optimized to minimize area on the integrated circuit.

Further, implementation of the claimed operations in an integrated network switch minimizes latency by eliminating the necessity of passing packets to an external central processing unit (CPU).

These and other features are neither disclosed nor suggested in the applied prior art.

Applicant traverses the assertion that Vig discloses: (1) an integrated network switch; (2) that stores a host identifier in a table; (3) or that searches an address table for layer 3 switching information based on the host identifier specified in a received layer 2 packet.

Vig provides no disclosure or suggestion whatsoever of an integrated network switch, as claimed. Rather, Vig discloses that while layer 2 operations are performed in the switch at wire speed, all layer 3 operations must be passed from the switch to the CPU, resulting in reduced network throughput (see, e.g., col. 6, lines 47-57). Even though the recitation of an “integrated network switch” is in the preamble of claims 1, 10, and 17, the recitation provides a structural limitation. As acknowledged in §2111.02 of the MPEP, “[a]ny terminology in the preamble that

limits the structure of the claimed invention must be treated as a claim limitation.” MPEP, Rev. 1, Feb. 2003, p. 2100-49 (*citing Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989); *Pac-Tec Inc. v. Amerace Corp.*, 903 F.2d 796, 801, 14 USPQ2d 1871, 1876 (Fed. Cir. 1990); *In re Stencil*, 828 F.2d 751, 4 USPQ2d 1071 (Fed. Cir. 1987)).

Further, Vig provides no disclosure or suggestion of storing a host identifier in a table, as asserted. Rather, Vig merely discloses in Figure 9 and at column 9, lines 20-41 that the CPU 95 uses the subnet-to-ports mapping table 93 to identify multiple destination ports that serve a given subnet: as specified in the subnet-to-ports mapping table 93 shown in Fig. 9, both ports “P1” 92 and “P3” 96 serve subnet “128.1.1”, and both ports “P2” 94 and “P4” 98 serve subnet “128.1.2”. Further, step 820 of Fig. 8B illustrates that learning of the subnet-to-ports mapping table 93 involves adding a source port to the “list of ports that the source subnet is currently active on.” (See col. 8, lines 55-60).

Hence, the CPU 95 forwards the packet (sent by Host-1 and destined for Host-2) to “a selected set of ports p2, p4 (reference numerals 94, 98 respectively) based on the state information as maintained in the mapping table 93 with subnet to ports mapping.” (See step 822 of Fig. 8B and col. 8, lines 60-67).

Further, the switch uses the ARP reply from Host-2 to associate the MAC address (“MAC-2”) of Host-2 with the switch port “P2” for updating of the port mapping table 97, causing subsequent packets between Host-1 and Host-2 to be switched using layer 2 switching based on the MAC address to port mapping table 97 maintained by the switch (col. 9, lines 35-41).

Hence, Vig provides no disclosure or suggestion whatsoever of storing the host identifier, as claimed, let alone searching a table based on the host identifier specified in a received packet. Rather, Vig uses the subnet to ports mapping table 93 for outputting a packet to all ports assigned to a given destination subnet in the case of an ARP request (see step 808 of Fig. 8A), or based strictly on layer 2 MAC address to port mapping by the MAC address to port table 97.

Further, Vig provides no disclosure or suggestion of searching the table base on a host identifier, as asserted.

Finally, the Official Action is deficient because it fails to identify the claimed feature in claim 17 that each network switch port receives data from a corresponding subnetwork. As apparent from the foregoing, Vig teaches that multiple ports may be used for a given subnetwork.

Hence, the rejection should be withdrawn because Vig fails to disclose or suggest the claimed features as asserted.

As admitted in the Official Action, Vig does not disclose the “plurality of address tables within switching module [sic] based on corresponding [sic] subnetwork identifier, each of the address tables configured for storing the host identifiers of respective transmitting nodes of a corresponding one of the subnetworks.”

Moreover, Vig is not merely silent as to this claimed feature, but teaches away from this claimed feature by disclosing that a single subnet may be served by multiple switch ports, hence Vig uses a single table for all subnet-to-port mapping. For example, Vig specifies at col. 3, lines 12-16: “[t]he switch builds a subnet to port mapping table based on packets received from each source host and selectively forwards the multicast packet to all ports on which the destination subnet is active.”

Further, Vig teaches at col. 8, lines 8-12 that the CPU performs centralized processing of the layer 3 information, and column 8, line 51 to column 9, line 2, specifies that Vig relies on a single table for all subnet-to-port mapping.

Hence, Vig teaches use of a centralized CPU and a single table for subnet-to-port mapping.

The teaching of Vig is significant because the Official Action fails to establish why one having skill in the art would have been motivated to modify Vig to add the teachings of Breitbart et al. The Official Action asserts that “one of ordinary skill in the art would be motivated to do this for efficient address mapping.” However, as demonstrated below, this assertion is without foundation and inconsistent with the teachings of the references. Further, Applicant objects to this supposed motivation, since the Examiner is using the claimed invention as a template to combine the references.

Breitbart et al. provides no disclosure whatsoever of a plurality of address tables, each configured for storing host identifiers of respective transmitting nodes of a corresponding one of the subnetworks, as claimed. In fact, Breitbart et al. has no description whatsoever of storing host identifiers associated with a given subnetwork, as asserted. Rather, Breitbart relates to a technique for determining the physical network topology of the network, namely the physical connectivity at the physical layer (i.e., layer-1) (col. 1, lines 5-18).

Further, the Official Action repeatedly relies on Column 12, lines 9-14 of Breitbart et al., which describes use of Virtual LANs in a switched domain:

Virtual LANs (VLANs) define multiple spanning trees within a switched domain. A switch may belong to multiple VLANs, and effectively maintain address forwarding

tables for each VLAN of which it is a part. Frames belonging to a specific VLAN are forwarded by a switch using forwarding tables produced for that VLAN.

(Col. 12, lines 9-14).

As notoriously well known in the art (and as evidenced by the attached Exhibit A which provides a description of VLANs), VLANs are defined by Ethernet (IEEE 802.1Q) and are solely limited to layer 2 (MAC) architectures that enable devices to communicate without being connected to the same segment.

Hence, VLANs are used to identify map a LAN station to its VLAN without changing the station's MAC or IP address. There is no disclosure whatsoever in Breitbart et al. of storing the host identifier of layer 3 packet information in one of a plurality of address tables, where each address table stores the host identifiers for a corresponding subnetwork, as claimed.

For these and other reasons, the rejection of claims 1-6, 9-13, 16-18, and 20-22 should be withdrawn.

Claims 7-8, 14-15, and 19 are rejected under §103 in view of Vig, Breitbart, and U.S. Patent No. 6,266,705. It is believed in view of the foregoing that these claims are allowable in view of their dependency of their respective independent claims.

In view of the above, it is believed this application is and condition for allowance, and such a Notice is respectfully solicited.

To the extent necessary, Applicant petitions for an extension of time under 37 C.F.R. 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including any missing or insufficient fees under 37 C.F.R. 1.17(a), to Deposit Account No. 50-0687, under Order No. 95-309, and please credit any excess fees to such deposit account.

Respectfully submitted,



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